

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (currently amended) A method for controlling automatic range shift decisions for selecting an appropriate range ~~state~~ from at least two possible ~~range states~~ ranges in a manually shifted, multiple-ratio vehicular transmission system, each range having a plurality of ratios, the method comprising:

detecting an intent to shift signal;

determining a set of potential target gear ratios, in response to detecting the intent to shift signal;

executing engine overspeed tests to verify at least one of the set of potential target gear ratios;

determining an appropriate range ~~state~~ based on operating variables including the target gear ratio verified by the engine overspeed tests; and

~~controlling~~ executing an automatic range shift to select the determined range ~~state based in part~~ on the target gear ratio when the target gear ratio is not in a current range.

2. (currently amended) The method of claim 1 wherein the at least two possible ~~range states~~ ranges include high range and low range.

3. (currently amended) The method of claim 1 wherein determining the appropriate range ~~state further~~ comprises:

determining if the vehicle speed is above a low speed latch; and if the vehicle speed is above the low speed latch, ~~executing the method for~~ controlling an automatic range shift ~~decisions~~, otherwise shifting the transmission system into low range.

4. (currently amended) The method of claim 1 wherein the ~~detected step~~ of detecting an intent to shift signal, together with other operating variables, triggers execution of the ~~method for controlling~~ automatic range shift ~~decisions~~.

5. (currently amended) The method of claim 1 further comprising:
detecting a shift knob force;
detecting at least one of a shift lever rail position ~~or~~ and a transition to a shift lever rail position; and
formulating the intent to shift signal based on the detected shift knob force and at least one of the shift lever rail position ~~or~~ and the transition to a shift lever rail position.

6. (currently amended) The method of claim ~~[[1]]~~ 5 further comprising:
detecting a shift lever rail position;
detecting a splitter select switch position; and
detecting a shift knob force direction; and
determining determination of the set of potential target gear ratios being based on the shift lever rail position, the splitter select switch position, and the shift knob force direction.

7. (currently amended) A method for controlling automatic range shift decisions for selecting an appropriate range ~~state~~ from at least two possible ~~range states~~ ranges in a manually shifted, multiple-ratio vehicular transmission system, each range having a plurality of ratios, the method comprising:

detecting a set of transmission system criteria, the set of transmission system criteria including a vehicle speed, a shift lever rail position, a transition to rail position, a shift knob force, a shift knob force direction, and a position of a splitter select switch;

detecting an operator's intent to shift signal based on the shift knob force and the shift knob force direction;

determining a set of potential target gear ratios based on the shift lever rail position, the position of the splitter select switch, and the shift knob force direction;

executing an engine overspeed tests test to select one ratio from the set of potential target gear ratios based on the set of transmission system criteria, in response to the detection of an the operator's intent to shift signal;

determining an appropriate range ~~state~~ based on the system criteria and selected target gear ratio verified by the engine overspeed tests test; and

initiating an automatic range shift for selecting the determined range ~~state~~ based on the system criteria and the selected target gear ratio when the target gear ratio is not in a current range.

8. (currently amended) The method of claim 7 wherein determining ~~the an~~ appropriate range ~~state~~ further comprises:

determining if the vehicle speed is above a low speed latch; and if the vehicle speed is above the low speed latch, ~~executing the method for controlling~~ executing automatic range shift decisions, otherwise shifting the transmission system into low range.

9. (currently amended) A method for controlling automatic range shift decisions for selecting an appropriate range from at least two possible ranges in a manually shifted vehicular transmission system, the method comprising:

detecting a set of transmission system criteria, the set of transmission system criteria including a vehicle speed, a shift lever rail position, a transition to rail position, a shift knob force, a shift knob force direction, and a position of a splitter select switch;

detecting an operator's intent to shift signal based on the shift knob force and the shift knob force direction;

determining a set of potential target gear ratios based on the shift lever rail position, the position of the splitter select switch, and the shift knob force direction;

executing an engine overspeed test to select one ratio from the set of potential target gear ratios based on the set of transmission system criteria, in response to the detection of the operator's intent to shift signal;

determining an appropriate range based on the selected target gear ratio verified by the engine overspeed test; and

initiating an automatic range shift for selecting the determined range based on the selected target gear ratio;

~~The method of claim 7 wherein the step of~~ determining the appropriate range state ~~further comprises comprising~~ shifting the transmission system into high range if a) the shift lever is on low rail or if a transition to low rail is detected and the shift lever position is in neutral, and b) the transmission system is in low range and the engine overspeed test indicates a positive result.

10. (currently amended) A method for controlling automatic range shift decisions for selecting an appropriate range from at least two possible ranges in a manually shifted vehicular transmission system, the method comprising:

detecting a set of transmission system criteria, the set of transmission system criteria including a vehicle speed, a shift lever rail position, a transition to rail position, a shift knob force, a shift knob force direction, and a position of a splitter select switch;

detecting an operator's intent to shift signal based on the shift knob force and the shift knob force direction;

determining a set of potential target gear ratios based on the shift lever rail position, the position of the splitter select switch, and the shift knob force direction;

executing an engine overspeed test to select one ratio from the set of potential target gear ratios based on the set of transmission system criteria, in response to the detection of the operator's intent to shift signal;

determining an appropriate range based on the selected target gear ratio verified by the engine overspeed test; and

initiating an automatic range shift for selecting the determined range based on the selected target gear ratio;

~~The method of claim 7 wherein the step of~~ determining the appropriate range state ~~further comprises comprising~~ shifting the transmission system into low range if a) the shift lever is on low rail or if the transition to low rail is detected and the shift lever position is in neutral, and b) the transmission system is in high range and the engine overspeed test indicates a negative result.

11. (currently amended) A method for controlling automatic range shift decisions for selecting an appropriate range from at least two possible ranges in a manually shifted vehicular transmission system, the method comprising:

detecting a set of transmission system criteria, the set of transmission system criteria including a vehicle speed, a shift lever rail position, a transition to rail position, a shift knob force, a shift knob force direction, and a position of a splitter select switch;

detecting an operator's intent to shift signal based on the shift knob force and the shift knob force direction;

determining a set of potential target gear ratios based on the shift lever rail position, the position of the splitter select switch, and the shift knob force direction;

executing an engine overspeed test to select one ratio from the set of potential target gear ratios based on the set of transmission system criteria, in response to the detection of the operator's intent to shift signal;

determining an appropriate range based on the selected target gear ratio verified by the engine overspeed test; and

initiating an automatic range shift for selecting the determined range based on the selected target gear ratio;

The method of claim 7 wherein the step of determining the appropriate range state further comprises comprising shifting the transmission system into low range if a) the shift lever is on low rail or if a transition to low rail is detected and the shift lever position is in neutral, and b) the range state is unknown and the engine overspeed test indicates a negative result, otherwise shifting the transmission system into high range.

12. (currently amended) A method for controlling automatic range shift decisions for selecting an appropriate range from at least two possible ranges in a manually shifted vehicular transmission system, the method comprising:

detecting a set of transmission system criteria, the set of transmission system criteria including a vehicle speed, a shift lever rail position, a transition to rail position, a shift knob force, a shift knob force direction, and a position of a splitter select switch;

detecting an operator's intent to shift signal based on the shift knob force and the shift knob force direction;

determining a set of potential target gear ratios based on the shift lever rail position, the position of the splitter select switch, and the shift knob force direction;

executing an engine overspeed test to select one ratio from the set of potential target gear ratios based on the set of transmission system criteria, in response to the detection of the operator's intent to shift signal; and

determining an appropriate range based on the selected target gear ratio verified by the engine overspeed test;

~~The method of claim 7 wherein the at least two possible range states includes ranges including a low range and a high range, the method comprising:; and~~

detecting a splitter select switch position; and if the transmission system is in low range and a) the splitter select switch indicates a splitter low position and the engine overspeed test for a first gear ratio indicates a positive result, or b) the splitter select switch indicates a high position and the engine overspeed test for a second gear indicates a positive result, then shifting the transmission system into high range.

13. (currently amended) A method for controlling automatic range shift decisions for selecting an appropriate range from at least two possible ranges in a manually shifted vehicular transmission system, the method comprising:

detecting a set of transmission system criteria, the set of transmission system criteria including a vehicle speed, a shift lever rail position, a transition to rail position, a shift knob force, a shift knob force direction, and a position of a splitter select switch;

detecting an operator's intent to shift signal based on the shift knob force and the shift knob force direction;

determining a set of potential target gear ratios based on the shift lever rail position, the position of the splitter select switch, and the shift knob force direction;

executing an engine overspeed test to select one ratio from the set of potential target gear ratios based on the set of transmission system criteria, in response to the detection of the operator's intent to shift signal;

determining an appropriate range based on the selected target gear ratio verified by the engine overspeed test;

initiating an automatic range shift for selecting the determined range based on the selected target gear ratio;

~~The method of claim 7 wherein the at least two possible range states includes ranges including a low range and a high range, the method comprising: and~~

detecting a splitter select switch position; and if the transmission is in high range and a) the splitter select switch indicates a splitter low position and the engine overspeed test for a first gear ratio indicates a negative result, or b) the splitter select switch indicates a splitter high position and the engine overspeed test for a second gear ratio indicates a negative result, then shifting the transmission system into low range.

14. (currently amended) A method for controlling automatic range shift decisions for selecting an appropriate range from at least two possible ranges in a manually shifted vehicular transmission, the method comprising:

detecting a set of transmission system criteria, the set of transmission system criteria including a vehicle speed, a shift lever rail position, a transition to rail position, a shift knob force, a shift knob force direction, and a position of a splitter select switch;

detecting an operator's intent to shift signal based on the shift knob force and the shift knob force direction;

determining a set of potential target gear ratios based on the shift lever rail position, the position of the splitter select switch, and the shift knob force direction;

executing an engine overspeed test to select one ratio from the set of potential target gear ratios based on the set of transmission system criteria, in response to the detection of the operator's intent to shift signal;

determining an appropriate range based on the selected target gear ratio verified by the engine overspeed test; and

initiating an automatic range shift for selecting the determined range based on the selected target gear ratio;

~~The method of claim 7 wherein the at least two possible range states includes ranges including a low range and a high range, the method comprising:~~ and

detecting a splitter select switch position; and if the transmission range state is unknown and a) the splitter select switch indicates a splitter low position and the engine overspeed test for a first gear ratio indicates a negative result, or b) the splitter select switch indicates a splitter high position and the gear overspeed test for a second gear ratio indicates a negative result, then shifting the transmission system into low range, otherwise shifting the transmission system into high range.

15. (currently amended) A method for controlling automatic range shift decisions for selecting an appropriate range from at least two possible ranges in a manually shifted vehicular transmission system, the method comprising:

detecting a set of transmission system criteria, the set of transmission system criteria including a vehicle speed, a shift lever rail position, a transition to rail position, a shift knob force, a shift knob force direction, and a position of a splitter select switch;

detecting an operator's intent to shift signal based on the shift knob force and the shift knob force direction;

determining a set of potential target gear ratios based on the shift lever rail position, the position of the splitter select switch, and the shift knob force direction;

executing an engine overspeed test to select one ratio from the set of potential target gear ratios based on the set of transmission system criteria, in response to the detection of the operator's intent to shift signal;

determining an appropriate range based on the selected target gear ratio verified by the engine overspeed test; and

initiating an automatic range shift for selecting the determined range based on the selected target gear ratio;

~~The method of claim 7 wherein the step of determining the appropriate range state further comprises~~ comprising shifting the transmission system into low range if a) the shift lever is on high rail or if a transition to high rail is detected and the shift position is in

neutral, and b) the transmission system is in high range and the engine overspeed test indicates a negative result.

16. (currently amended) A method for controlling automatic range shift decisions for selecting an appropriate range from at least two possible ranges in a manually shifted vehicular transmission system, the method comprising:

detecting a set of transmission system criteria, the set of transmission system criteria including a vehicle speed, a shift lever rail position, a transition to rail position, a shift knob force, a shift knob force direction, and a position of a splitter select switch;

detecting an operator's intent to shift signal based on the shift knob force and the shift knob force direction;

determining a set of potential target gear ratios based on the shift lever rail position, the position of the splitter select switch, and the shift knob force direction;

executing an engine overspeed test to select one ratio from the set of potential target gear ratios based on the set of transmission system criteria, in response to the detection of the operator's intent to shift signal;

determining an appropriate range based on the selected target gear ratio verified by the engine overspeed test; and

initiating an automatic range shift for selecting the determined range based on the selected target gear ratio;

~~The method of claim 7 wherein the step of determining the appropriate range state further comprises comprising maintaining a the transmission system~~ in low range if a) the shift lever is on high rail or if a transition to high rail is detected and the shift position is in neutral, and b) the transmission system is currently in low range.

17. (currently amended) A method for controlling automatic range shift decisions for selecting an appropriate range from at least two possible ranges in a manually shifted vehicular transmission system, the method comprising:

detecting a set of transmission system criteria, the set of transmission system criteria including a vehicle speed, a shift lever rail position, a transition to rail position, a shift knob force, a shift knob force direction, and a position of a splitter select switch;

detecting an operator's intent to shift signal based on the shift knob force and the shift knob force direction;

determining a set of potential target gear ratios based on the shift lever rail position, the position of the splitter select switch, and the shift knob force direction;

executing an engine overspeed test to select one ratio from the set of potential target gear ratios based on the set of transmission system criteria, in response to the detection of the operator's intent to shift signal;

determining an appropriate range based on the selected target gear ratio verified by the engine overspeed test; and

initiating an automatic range shift for selecting the determined range based on the selected target gear ratio;

~~The method of claim 7 wherein~~ the step of determining the appropriate range state further comprises shifting the transmission system into low range if a) the shift lever is on high rail or if a transition to high rail is detected and the shift position is in neutral, and b) the current range state is unknown and the engine overspeed test indicates a negative result, otherwise shifting the transmission system into high range.

18. (currently amended) A manually shifted compound transmission system comprising:

- a manually operated shift lever;
- a position sensor for providing a position signal indicative of a position of the shift lever;
- a force threshold detector for providing a shift knob force signal indicative of forces applied to the shift lever in a longitudinal direction;
- a splitter select switch for engaging a selected splitter ratio and for providing a signal indicative thereof;
- a speed sensor for providing signals indicative of engine rotational speed;

a controller including control logic for receiving input signals from the position sensor, the force threshold sensor, the splitter select switch, and the speed sensor to formulate an intent to shift signal and to determine a set of potential target gear ratios, the control logic executing engine overspeed tests to verify at least one of the set of potential target gear ratios, and automatically determining an appropriate one of a low range state and a high range of the transmission system based on the selected target gear ratio; and

a range shift mechanism for shifting the transmission system into the appropriate range ~~state as~~ automatically determined by the control logic.

19. (original) The manually shifted compound transmission system of claim 18 wherein the position signal is operable to indicate a transition to one of at least two possible rail positions including high rail and low rail.

20. (original) The manually shifted compound transmission system of claim 18 wherein the splitter select switch is operable to toggle between splitter high and splitter low gear ratios.

21. (currently amended) The manually shifted compound transmission system of claim 18 wherein the speed signal is operable to indicate whether the vehicle is operating above a low speed latch; and ~~if the vehicle speed is above the low speed latch, executing the method for controlling automatic range shift decisions, otherwise the transmission is shifted into low range~~ means for controlling automatic range shift determinations if the vehicle speed is above the low speed latch and for shifting the transmission into low range if the vehicle speed is lower than the low speed latch.

22. (currently amended) The manually shifted compound transmission system of claim 18 wherein the control logic includes logic rules for analyzing the input signals, for processing the input signals to automatically determine an appropriate range ~~state~~ of the transmission system, and for delivering an output signal to the system actuators to cause

the transmission system to shift to ~~one of the at least two possible range states~~ the appropriate range determined by the control logic.

23. (currently amended) A manually shifted compound transmission system comprising:

a manually operated shift lever;

a position sensor for providing a position signal indicative of a position of the shift lever;

a force threshold detector for providing a shift knob force signal indicative of forces applied to the shift lever in a longitudinal direction;

a splitter select switch for engaging a selected splitter ratio and for providing a signal indicative thereof;

a speed sensor for providing signals indicative of engine rotational speed;

a controller including control logic for receiving input signals from the position sensor, the force threshold sensor, the splitter select switch, and the speed sensor to formulate an intent to shift signal and to determine a set of potential target gear ratios, the control logic executing engine overspeed tests to verify at least one of the set of potential target gear ratios, and automatically determining an appropriate one of a low range and a high range of the transmission system based on the selected target gear ratio; and

a range shift mechanism for shifting the transmission system into the appropriate range automatically determined by the control logic;

the position signal being operable to indicate a transition to one of at least two possible rail positions including high rail and low rail;

~~The manually shifted compound transmission system of claim 18 wherein the~~ step of determining the appropriate range state of the transmission system comprises comprising shifting the transmission system into high range if a) the shift lever is on low rail or if the position signal indicates a transition to low rail and the shift lever position is in neutral, and b) the transmission system is in low range and an overspeed test indicates a positive result.

24. (currently amended) A manually shifted compound transmission system comprising:

a manually operated shift lever;

a position sensor for providing a position signal indicative of a position of the shift lever;

a force threshold detector for providing a shift knob force signal indicative of forces applied to the shift lever in a longitudinal direction;

a splitter select switch for engaging a selected splitter ratio and for providing a signal indicative thereof;

a speed sensor for providing signals indicative of engine rotational speed;

a controller including control logic for receiving input signals from the position sensor, the force threshold sensor, the splitter select switch, and the speed sensor to formulate an intent to shift signal and to determine a set of potential target gear ratios, the control logic executing engine overspeed tests to verify at least one of the set of potential target gear ratios, and automatically determining an appropriate one of a low range and a high range of the transmission system based on the selected target gear ratio; and

a range shift mechanism for shifting the transmission system into the appropriate range automatically determined by the control logic;

the position signal being operable to indicate a transition to one of at least two possible rail positions including high rail and low rail;

~~The manually shifted compound transmission system of claim 18 wherein the~~
step of determining the appropriate range state further comprises ~~comprising~~ shifting the transmission into low range if a) the shift lever is on low rail or if the position signal indicates a transition to low rail and the shift lever position is in neutral, and b) the transmission is in high range and the overspeed test indicates a negative result.

25. (currently amended) A manually shifted compound transmission system comprising:

a manually operated shift lever;

a position sensor for providing a position signal indicative of a position of the shift lever;

a force threshold detector for providing a shift knob force signal indicative of forces applied to the shift lever in a longitudinal direction;

a splitter select switch for engaging a selected splitter ratio and for providing a signal indicative thereof;

a speed sensor for providing signals indicative of engine rotational speed;

a controller including control logic for receiving input signals from the position sensor, the force threshold sensor, the splitter select switch, and the speed sensor to formulate an intent to shift signal and to determine a set of potential target gear ratios, the control logic executing engine overspeed tests to verify at least one of the set of potential target gear ratios, and automatically determining an appropriate one of a low range and a high range of the transmission system based on the selected target gear ratio; and

a range shift mechanism for shifting the transmission system into the appropriate range automatically determined by the control logic;

the position signal being operable to indicate a transition to one of at least two possible rail positions including high rail and low rail;

~~The manually shifted compound transmission of claim 18 wherein the step of determining the appropriate range state further comprises~~ comprising ~~shifting the transmission system into low range if a) the shift lever is on low rail or if a transition to low rail is detected and the shift lever position is in neutral, and b) the range state is unknown and the overspeed test indicates a negative result, otherwise shifting the transmission system into high range.~~

26. (currently amended) A manually shifted compound transmission system comprising:

a manually operated shift lever;

a position sensor for providing a position signal indicative of a position of the shift lever;

a force threshold detector for providing a shift knob force signal indicative of forces applied to the shift lever in a longitudinal direction;

a splitter select switch for engaging a selected splitter ratio and for providing a signal indicative thereof;

a speed sensor for providing signals indicative of engine rotational speed;

a controller including control logic for receiving input signals from the position sensor, the force threshold sensor, the splitter select switch, and the speed sensor to formulate an intent to shift signal and to determine a set of potential target gear ratios, the control logic executing engine overspeed tests to verify at least one of the set of potential target gear ratios, and automatically determining an appropriate one of a low range and a high range of the transmission system based on the selected target gear ratio;

a range shift mechanism for shifting the transmission system into the appropriate range automatically determined by the control logic;

the position signal being operable to indicate a transition to one of at least two possible rail positions including high rail and low rail;

~~The manually shifted compound transmission system of claim 18 wherein the at least two possible range states comprises~~ ranges comprising a low range and a high range, the system comprising: and

means for detecting a splitter select switch position; and if the transmission is in low range and a) the splitter select switch indicates a splitter low position and a gear the engine overspeed test for a first gear ratio is true, or b) the splitter select switch indicates a splitter high position and the gear engine overspeed test for a second gear ratio is true, then shifting the transmission into high range.

27. (currently amended) A manually shifted compound transmission system comprising:

a manually operated shift lever;

a position sensor for providing a position signal indicative of a position of the shift lever;

a force threshold detector for providing a shift knob force signal indicative of forces applied to the shift lever in a longitudinal direction;

a splitter select switch for engaging a selected splitter ratio and for providing a signal indicative thereof;

a speed sensor for providing signals indicative of engine rotational speed;

a controller including control logic for receiving input signals from the position sensor, the force threshold sensor, the splitter select switch, and the speed sensor to formulate an intent to shift signal and to determine a set of potential target gear ratios, the control logic executing engine overspeed tests to verify at least one of the set of potential target gear ratios, and automatically determining an appropriate one of a low range and a high range of the transmission system based on the selected target gear ratio;

~~The manually shifted compound transmission system of claim 18 wherein the at least two possible range states comprises comprising a low range and a high range; and, the system comprising:~~

means for detecting a splitter select switch position; and if the transmission system is in high range and a) the splitter select switch indicates a splitter low position and a gear overspeed test for a first gear ratio is false, or b) the splitter select switch indicates a splitter high position and ~~a gear~~ the engine overspeed test for a second gear ratio is false, then shifting the transmission system into low range.

28. (currently amended) A manually shifted compound transmission system comprising:

a manually operated shift lever;

a position sensor for providing a position signal indicative of a position of the shift lever;

a force threshold detector for providing a shift knob force signal indicative of forces applied to the shift lever in a longitudinal direction;

a splitter select switch for engaging a selected splitter ratio and for providing a signal indicative thereof;

a speed sensor for providing signals indicative of engine rotational speed;

a controller including control logic for receiving input signals from the position sensor, the force threshold sensor, the splitter select switch, and the speed sensor to formulate

an intent to shift signal and to determine a set of potential target gear ratios, the control logic executing engine overspeed tests to verify at least one of the set of potential target gear ratios, and automatically determining an appropriate one of a low range and a high range of the transmission system based on the selected target gear ratio; and

a range shift mechanism for shifting the transmission system into the appropriate range automatically determined by the control logic;

~~The manually shifted compound transmission system of claim 18 wherein the at least two possible range states comprises comprising a low range and a high range; the system comprising:~~

means for detecting a splitter select switch position; and if the transmission range state is unknown and a) the splitter select switch indicates a splitter low position and a gear overspeed test for a first gear ratio is false, or b) the splitter select switch indicates a splitter high position and a gear the engine overspeed test for a second gear ratio is false, then shifting the transmission into low range, otherwise shifting the transmission into high range.

29. (currently amended) A manually shifted compound transmission system comprising:

a manually operated shift lever;

a position sensor for providing a position signal indicative of a position of the shift lever;

a force threshold detector for providing a shift knob force signal indicative of forces applied to the shift lever in a longitudinal direction;

a splitter select switch for engaging a selected splitter ratio and for providing a signal indicative thereof;

a speed sensor for providing signals indicative of engine rotational speed;

a controller including control logic for receiving input signals from the position sensor, the force threshold sensor, the splitter select switch, and the speed sensor to formulate an intent to shift signal and to determine a set of potential target gear ratios, the control logic executing engine overspeed tests to verify at least one of the set of potential target gear ratios;

and automatically determining an appropriate one of a low range and a high range of the transmission system based on the selected target gear ratio; and

a range shift mechanism for shifting the transmission system into the appropriate range automatically determined by the control logic;

the position signal being operable to indicate a transition to one of at least two possible rail positions including high rail and low rail;

~~The manually shifted compound transmission system of claim 18 wherein the step of determining the appropriate range state further comprises~~ comprising ~~shifting the transmission into low range if a) the shift lever is on high rail or if the position signal indicates a transition to high rail and the shift position is in neutral, and b) the transmission is in high range and the overspeed test indicates a negative result.~~

30. (currently amended) A manually shifted compound transmission system comprising:

a manually operated shift lever;

a position sensor for providing a position signal indicative of a position of the shift lever;

a force threshold detector for providing a shift knob force signal indicative of forces applied to the shift lever in a longitudinal direction;

a splitter select switch for engaging a selected splitter ratio and for providing a signal indicative thereof;

a speed sensor for providing signals indicative of engine rotational speed;

a controller including control logic for receiving input signals from the position sensor, the force threshold sensor, the splitter select switch, and the speed sensor to formulate an intent to shift signal and to determine a set of potential target gear ratios, the control logic executing engine overspeed tests to verify at least one of the set of potential target gear ratios, and automatically determining an appropriate one of a low range and a high range of the transmission system based on the selected target gear ratio; and

a range shift mechanism for shifting the transmission system into the appropriate range automatically determined by the control logic;

the position signal being operable to indicate a transition to one of at least two possible rail positions including high rail and low rail;

~~The manually shifted compound transmission system of claim 18 wherein the step of determining the appropriate range state further comprises~~ comprising maintaining a transmission system in low range if a) the shift lever is on high rail or if the position signal indicates a transition to high rail and the shift position is in neutral, and b) the transmission system is currently in low range, then maintaining the transmission in low range.

31. (currently amended) A manually shifted compound transmission system comprising:

a manually operated shift lever;

a position sensor for providing a position signal indicative of a position of the shift lever;

a force threshold detector for providing a shift knob force signal indicative of forces applied to the shift lever in a longitudinal direction;

a splitter select switch for engaging a selected splitter ratio and for providing a signal indicative thereof;

a speed sensor for providing signals indicative of engine rotational speed;

a controller including control logic for receiving input signals from the position sensor, the force threshold sensor, the splitter select switch, and the speed sensor to formulate an intent to shift signal and to determine a set of potential target gear ratios, the control logic executing engine overspeed tests to verify at least one of the set of potential target gear ratios, and automatically determining an appropriate one of a low range and a high range of the transmission system based on the selected target gear ratio; and

a range shift mechanism for shifting the transmission system into the appropriate range automatically determined by the control logic;

the position signal being operable to indicate a transition to one of at least two possible rail positions including high rail and low rail;

~~The manually shifted compound transmission system of claim 18 wherein the step of determining the appropriate range state further comprises~~ comprising shifting the

transmission system into low range if a) the shift lever is on high rail or if the position signal indicates a transition to high rail and the shift position is in neutral, and b) the current range state is unknown and the overspeed test indicates a negative result, otherwise shifting the transmission system into high range.